CLAIMS:

1. A method for processing a digital image B_I, the image B_I being a convolution of an image F and a point spread function h, comprising removing noise from the image B_I so as to produce an image B' of reduced noise, and calculating F based upon B'.

2. The method of Claim 1 wherein an amount of noise is calculated in a plurality of images B, and the image B' is selected as an image of essentially minimal noise among the images B.

3. The method of Claim 1, wherein the amount of noise in an image is calculated using an algebraic expression involving the gradient of a function $P(x)$ obtained by inverse Fourier transform of $\tilde{B}(q)/\tilde{h}(q)$.

4. The method of Claim 3, wherein the amount of noise N in an image B is calculated according to the algebraic expression $N = \int \nabla P(x) \cdot \nabla P^*(x) dx$, wherein ∇ indicates the gradient and "*" indicates complex conjugate.

5. The method according to Claim 4 wherein $\tilde{B}'(q)$, the Fourier transform of B', is equal to $\tilde{B}_{i+1}(q)$ for same integer i, where $\tilde{B}_{i+1}(q)$ is obtained according to the algebraic expression $\tilde{B}_{i+1}(q) = \tilde{B}_1(q)(1 + \varepsilon \left\| \tilde{D}(q) \right\|^2 q^2)^i$, where ε is a small positive number.

6. The method according to Claim 4 wherein $\tilde{B}'(q)$ is obtained according to the algebraic expression $\tilde{B}'(q) = \tilde{B}_1(q) e^{-\alpha \left\| \tilde{D}(q) \right\|^2 q^2}$, where α is a predetermined constant, and and $\tilde{D}(q)$ is the Fourier transform of 1/h.

7. The method according to Claim 1 wherein calculating F involves calculating an inverse Fourier transform of the algebraic expression $\tilde{B}'(q)/\tilde{h}(q)$, wherein $\tilde{B}'(q)$ is the Fourier transform of the image B' of reduced noise, and $\tilde{h}(q)$ is the Fourier transform of h.

8. A method for processing a deconvoluted image B, the image B having been deconvoluted according to a deconvolution filter D, the method comprising reducing correlation between the image and the deconvolution filter.

9. The method of Claim 8 wherein an amount of correlation is calculated in a plurality of images P, and an image P' is selected among the images P as an image having essentially minimal correlation with the deconvlution filter.

10. The method of Claim 9 wherein the amount of correlation C in an image P is calculated according to the algebraic expression $C = \int dq \left\| \tilde{D}(q) \right\|^2 \cdot \left\| \tilde{P}(q) \right\|^2$ wherein $\tilde{P}(q)$ is the Fourier transform of an image P.

11. The method according to Claim 9 wherein $\tilde{P}'(q)$, the Fourier transform of P', is equal to $\tilde{P}_{i+1}(q)$ for same integer i, where $\tilde{P}_{i+1}(q)$ is obtained according to the algebraic expression $\tilde{P}_{i+1}(q) = \tilde{P}_i(q)(1 + \varepsilon \left\| \tilde{D}(q) \right\|^2)'$, where ε is a small positive number.

12. The method according to Claim 9 wherein $\tilde{P}'(q)$ is obtained according to the algebraic expression $\tilde{P}'(q) = \tilde{P}_1(q) e^{-\beta \left\| \tilde{D}(q) \right\|^2}$, where β is a predetermined constant.

13. The method for processing a digital image BI, the image BI being a convolution of an image F and a point spread function h comprising the steps of:

(a) removing noise from the image BI so as to produce an image B' of reduced noise;

(b) obtaining function $\tilde{P}_1(q)$ according to the algebraic expression $\tilde{P}_1(q) = \tilde{B}'(q) / \tilde{h}(q)$;

(c) reducing correlation between $\tilde{P}_1$ and $1/\tilde{h}$ so as to product a function $\tilde{P}'$ of reduced correlation; and

(d) obtaining a rectified image F by inverse Fourier transform of $\tilde{P}'(q)$.

14. A method for obtaining a radius r of a point spread function h describing an out-of-focus distortion of a digital image B, the method comprising a step of calculating a gradient at a plurality of pixels in the image B.

15. The method according to Claim 14 in which a radius r(x) is calculated at each of the plurality of pixels based upon the gradient.

16. The method according to Claim 15 wherein each of the plurality of pixels is located at an edge of the image B.

17. The method according to Claim 15 wherein a radius r(x) is inversely proportional to the gradient at x.

18. The method according to Claim 16 wherein r is obtained as the r(x) having an essentially maximal frequency among the calculated radii r(x).

19. The method according to Claim 18 wherein a radius r(x) is calculated according to the algebraic expression $r(x)=\frac{2}{\pi s(x)}$, wherein s(x) is the absolute value of the gradient of B at x normalized by dividing by the height of the edge at x.

20. The method according to Claim 1, further comprising a step of producing the image B' from an image B_0, where the image B_0 was obtained using a digital camera that applies a transformation to a light level detected at a pixel, the transformation having an inverse, wherein B_1 is obtained from the image B_0 by applying to the image B_0 the inverse transformation.

21. A program storage device readable by machine, tangibly embodying a program of instructions executable by the machine to perform method steps for processing a digital image B_I, the image B_I being a convolution of an image F and a point spread function h, the method comprising removing noise from the image B_I so as to produce an image B' of reduced noise, and calculating F based upon B'.

22. A program storage device readable by machine, tangibly embodying a program of instructions executable by the machine to perform method steps for processing a deconvoluted image B, the image B having been deconvoluted according to a deconvolution filter D, the method comprising reducing correlation between the image and the deconvolution filter.

23. The program storage device readable by machine, tangibly embodying a program of instructions executable by the machine to perform method steps for

processing a digital image BI, the image BI being a convolution of an image F and a point spread function h, comprising the steps of:

(a) removing noise from the image BI so as to produce an image B' of reduced noise;

(b) obtaining function $\widetilde{P}_1(q)$ according to the algebraic expression $\widetilde{P}_1(q) = \widetilde{B}'(q) / \widetilde{h}(q)$;

(c) reducing calculation between $\widetilde{P}_1$ and $\widetilde{1}/h$ so as to product a function $\widetilde{P}'$ of reduced correlation; and

(d) obtaining a rectified image F by inverse Fourier transform of $\widetilde{P}'(q)$.

24. A program storage device readable by machine, tangibly embodying a program of instructions executable by the machine to perform method steps for obtaining a radius r of a point spread function h describing an out-of-focus distortion of a digital image B, the method comprising a step of calculating a gradient at a plurality of pixels in the image B.